

ABSTRACT OF THE DISCLOSURE

The present invention relates to a semiconductor device; in particular, an object of the invention is to provide a semiconductor device in which a main current flows in a direction of thickness of the semiconductor substrate and which offers satisfactory performance and breakdown voltage and also satisfactory mechanical strength of the semiconductor substrate, and which needs no inconvenient control of the exposure system etc. during photolithography process.

In order to achieve the object, a semiconductor device has a semiconductor substrate (1) having a first main surface (MS1), a second main surface (MS2) opposite to the first main surface, and a recess (9) defined in the second main surface (MS2) by side surfaces (91) and a bottom surface (92), a semiconductor region (IP5) provided in the bottom surface (92) of the recess (9) of the semiconductor substrate (1), semiconductor regions (IP4) provided in the surface of a peripheral region 1A on the second main surface (MS2) side, and insulating films (IL) provided on the side surfaces (91) of the recess (9) to electrically insulate the semiconductor regions (IP4) and (IP5).